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FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEY and WATER SUPPLY FORECASTS for MONTANA & NORTHERN WYOMING

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE, and MONTANA AGRICULTURAL EXPERIMENT STATION

In cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, U.S. Bureau of Reclamation, State Engineers of Montana and Wyoming and other Federal, State and private organizations.

MAY 1, 1958

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

TO RECIPIENTS OF COOPERATIVE SNOW SURVEY AND WATER SUPPLY FORECAST REPORTS:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Fortunately, most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from fore-knowledge of the runoff.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, about 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1300 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

By relating snow survey measurements taken over a period of years to spring-summer runoff during the same period, relationships have been developed which make it possible to forecast seasonal runoff several months in advance of occurrence. In order to make a forecast, once a forecast relationship has been developed, the maximum snow water content at previously selected key snow courses is usually entered in the forecast relationship. More accurate forecasts are often obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast relationships.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	COOPERATING WITH	LOCATION
RIVER BASINS COLORADO, RIO GRANDE	Monthly (Feb May)	COLO. EXP. STATION	FT. COLLINS, COLO.
COLUMBIA Includes Alaska	MONTHLY (JAN MAY))	BOISE, IDAHO
UPPER MISSOURI	MONTHLY (FEB MAY))MONT.AGR.EXP.STATION	
WEST-WIDE	SEMI-ANNUALLY(OCT. 1 AND APR.1)	COOPERATORS	PORTLAND, OREGON
STATES			
ARIZONA		SALT R. VALLEY WATER	PHOENIX, ARIZONA
NE VAOA	MONTHLY (FEB APR	.)NEVADA STATE ENGINEER	RENO, NEVADA
OREGON	Monthly (JanMay)ORE.AGR.EXP.STATION	PORTLANO, OREGON
UTAH	Monthly (JanMay)UTAH STATE ENGINEER)UTAH AGR.EXP.STATION	SALT LAKE CITY, UTAH
Washington	MONTHLY (FEBMAY	WASH. STATE DEPT. OF)CONSE VATION ANO DEVEL PMENT	Spokane. Washington
WYOMING	MONTHLY (FEB JUN	E) WYOMING STATE ENGINEER	
) C Used Water Sussi	. Foreseting Section

Copies of the various reports may be secured from: Head, Water Supply Forecasting Section Soil Conservation Service 209 S.W. 5th Avenue, Portland 4, Oregon

PUBLISHED BY OTHER AGENCIES

 BRITISH COLUMBIA MONTHLY	(FEBJUNE)	LANOS B.C.
CALIFORNIAMonthly	(FEBMAY)	RCES.

FEDERAL - STATE COOPERATIVE

SNOW SURVEYS and WATER SUPPLY FORECASTS

for

MONTANA AND NORTHERN WYOMING

(Upper Missouri and Upper Columbia River Basins)

Report Prepared by:

A. R. Codd Hydraulic Engineer Soil Conservation Service

Soil Conservation Service
U. S. Department of Agriculture
and
Montana Agricultural Experiment Station
Bozeman, Montana

Report issued by:

H. D. Hurd State Conservationist of Montana O. W. Monson
Irrigation Engineer
Montana Agricultural
Experiment Station

R.E. Huffman, Director Montana Agricultural Experiment Station



WATER SUPPLY OUTLOOK FOR THE STATE OF MONTANA as of MAY 1, 1958

The 1958 Water Supply from the winter snow-pack * * has increased to 92 percent average. April storms * * deposited considerable snow in the mountains, bringing 3,5 * the snow-pack above average at most stations. * The Columbia River basin in Montana also received * * an additional supply. Forecasts of stream-flow have * * been raised to 95 and 100 percent average. Reservoir Storage is somewhat below average, prob- * * ably reflecting the low April stream-flows. No concern * * is expressed regarding the filling of reservoirs to * desired levels. The soil mantle under the snow-pack is unfrozen * and quite wet at all stations.

MISSOURI RIVER

JEFFERSON RIVER:

Stream-flow forecasts were raised slightly to 90 and 107 percent along the Beaverhead and Jefferson Rivers. Water supply should be adequate for irrigation.

MADISON RIVER:

The Madison River system is forecast to produce only a fair water supply. Forecasts were raised by only one percent with 88 percent average flow to enter Hebgen reservoir and 88 percent average flow to pass McAllister during the April-September period.

MISSOURI RIVER - Toston to Fort Peck:

May forecasts were raised only one percent over those issued on April first. It now appears that 2,240,000 acre feet will pass into Canyon Ferry reservoir during the April-September period.

Storms during April over the Sun River basin added sufficient water to the snow-pack to raise the forecast into Gibson reservoir to 101 percent average or 574,000 acre feet of flow during the April-September period. The Marias River near Shelby should flow 103 percent average or 543,000 acre feet during the same period.

The forecast for the Yellowstone River at Corwin Springs was raised to 92 percent average; at Billings the forecast was raised to 87 percent average.



COLUMBIA RIVER

April storms added considerable water to the snow-pack on the Clark Fork and Flathead River basins to increase the volume of April-September flow by 5 to 8 percent over those issued on April first.

CLARK FORK RIVER:

The Clark Fork River above Missoula should produce 120 percent average or 1,921,000 acre feet of water during the runoff season. The Blackfoot River above Bonner will probably produce 127 percent average or 1,083,000 acre feet. The Bitterroot River is still low; the tributary will produce a possible 95 percent average discharge which is forecast for April-September.

FLATHEAD RIVER:

Flathead River forecasts were modified upward by 4 to 12 percent, due to heavy moisture producing storms during April. The Flathead River at Columbia Falls is now expected to flow 92 percent average during the April-September period or 5,183,000 acre feet. The South Fork of the Flathead is expected to produce 2,030,000 acre feet of water into Hungry Horse reservoir during the same runoff period or 99 percent average. It is anticipated that 1,717,000 acre feet will flow into the reservoir during April-June. The forecast for the Flathead at Polson during April-September will probably be 91 percent average or 6,018,000 acre feet.

The Swan River watershed appears to have a very large snow-pack this season with near record high water content reported at snow survey courses on the Swan and Mission ranges. This year's figures are exceeded only by a few inches of water content in 1954 and 1950. The forecast for the Swan River near Big Fork is 134 percent average or 786,000 acre feet for the April-September period and 582,000 acre feet during April-June.

The combined flow of the Clark Fork and Flathead Rivers at Thompson Falls is forecast to an even 100 percent average or 11,508,000 acre feet to flow from April through September. A possible 9,603,000 acre feet flow is forecast for the April-June period.



The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature during the forecast period will be near average. Appreciable deviations from normal of temperature and/or precipitation during the forecast period will correspondingly modify these forecasts.

	Season	al Strea	m-Flow in T	housands	of Acre	Feet
UPPER MISSOURI RIVER	FORECAST	%	FORE-			1938-52
IN MONTANA	RUNOFF	15-Yr.	CAST	Measured		Average
		AVG.	PERIOD	1956##	1955	
RED ROCK RIVER						
Monida (near) (1)	73	90	Apr-Sept	60	71	81
, , , ,	68	90	Apr-July	58	66	76
BEAVERHEAD RIVER						
Barratts (at)	166	94	Apr-Sept	155	119	177
DIG HAT II DIVING	126	94	Apr-July	122	87	134
BIG HOLE RIVER		7.01		01.0	٧.,٠	-
Melrose (near)	771	104	Apr-Sept	842	592	745
JEFFERSON RIVER	713	104	Apr-July	796	548	687
Sappington (at)	1131	107	Apr-Sept	1045	793	1057
	1004	107	Apr-July	967	725	938
MADISON RIVER		•		1		
West Yellowstone (near)	177	89	Apr-Sept	255	183	198
	134	89	Apr-July	200	136	151
Grayling (near) (2)	368	88	Apr-Sept	488	345	420
(Net inflow to Hebgen Lk)	291	88	Apr-July	402	274	333
McAllister (near) (3)	641	88	Apr-Sept	802	593	726
GALLATIN RIVER	517	88	Apr-July	671	481	585
Gateway (near)	410	92	Apr-Sept	499	350	445
(110012)	353	92	Apr-July	442	296	384
Logan (at)	419	88	Apr-Sept	512	384	478
	359	88	Apr-July	452	336	410
Hyalite Cr. R.S. (at) (7)	36.7	104	Apr-Sept	29	34	35
	31.3	104	Apr-July	25	29	30
MISSOURI RIVER	001.0	0.0			-	
Toston (at) (3)	2240 1895	88	Apr-Sept	2345	1730	2535*
Fort Benton (at) (4)	3318	86 98	Apr-July	2098	1549 2986	2191* 3381
1010 Belloui (ac) (4)	2797	97	Apr-Sept Apr-July	3131 2722	2557	2874
Virgelle (at) (4)	3975	99	Apr-Sept	3261	3708	4013
(Loma)	3393	98	Apr-July	2806	3232	3445
Zortman (near) (4)	4241	97	Apr-Sept	3588	4264	4357
	3609	97	Apr-July	3076	3698	3726
Ft. Peck Dam (below) (5)	4171	96	Apr-Sept	3290	3743	4362
Lichard M. D.	3614	98	Apr-July	2613	3049	3666
Williston, N. D.	10338	88	Apr-Sept	9625	9533	11750
	8889	87	Apr-July	8053	8304	10228

Observed flow plus change in Storage in Lima Reservoir.

Observed flow plus change in Storage in Hebgen Lake.

Observed flow plus change in Storage in Hebgen and Ennis Lakes.
Observed flow plus change in Storage in Canyon Ferry.
Observed flow plus change in Storage in Canyon Ferry and Ft. Peck Reservoirs.

⁷⁾ Observed flow plus change in Storage in Hyalite Reservoir.
(##) Preliminary data furnished by U. S. Geological Survey, subject to correction. Less than 15 years in 1938-52 period. Average for 15 yrs, nearest the base period.



	Seasona	al Stream	n-Flow in T	housands	of Acre	Feet
UPPER MISSOURI RIVER	FORECAST	0/0	FORE-			1938-52
IN MONTANA	RUNOFF	15-Yr.	CAST	Measured		Average
		AVG.	PERIOD	1956##	1955	
SUN RIVER			0.0			
Net inflow to Gibson			The state of the s			A CONTRACTOR OF THE CONTRACTOR
Reservoir	574	101	Apr-Sept	668	517	570*
100001 0011	524	101	Apr-July	618	478	521*
MARIAS RIVER	,					
Shelby (near)	543	103	Apr-Sept	684	614	527
, , , , , , , , , , , , , , , , , , , ,	499	104	Apr-July	617	561	482
JUDITH RIVER			#			Total a galante
Utica (near)	31.0	78	Apr-Sept	18.4	29.2	39.8.
	28.4	78	Apr-July	17.6	27.3	36.3.
MUSSELSHELL RIVER						per constant
Delpine (near)	7.3	108	Apr-Sept	4.8	3.6	6.8.
	6.0	107	Apr-July	4.1	2.9	5.6
YELLOWSTONE RIVER			İ			The state of the s
Corwin Springs (at)	1723	92	Apr-Sept	2427	1527	1870
	1438	92	Apr-July	2099	1254	1556
Livingston (near)	1961	92	Apr-Sept	3219	1621	2134
	1619	92	Apr-July	2322	1298	1770
Billings (at)	3502	87	Apr-Sept	4788	2958	4025
	3007	87	Apr-July	4225	2549	3446
Miles City (at)	5544	87	Apr-Sept	6175	4381	6369
	4744	88	Apr-July	5324	3816	5421
Sidney (near)	5729	86	Apr-Sept	6114	4553	1 6648
OUTTIE DO DITTIED	4964	87	Apr-July	5315	4082	5724
SHIELDS RIVER	7.00	٥٢		08.0	E0.3	705 (
Clyde Park (at)	100	95	Apr-Sept	97.0	72.1	105.6
DOCEDID DITTED	94	95	Apr-July	94.2	67.0	98.0
ROSEBUD RIVER	סרר	07	Ann Cont	057 1.	7520	262.0
Absarokee (near)	255 205	97 97	Apr-Sept Apr-July	251.4	153.0	263.0
STILLWATER RIVER	20)	71	ADI-July	201.0	124.)	[21107
Rosebud Cr. (above)	321	97	Apr-Sept	359.9	243.1	330.8
nosebud or. (above)	280	97	Apr-July	321.1	213.1	288.1
Absarokee (near)	582	98	Apr-Sept	611.4	396.1	593.8
nobaronoe (noar)	489	98	Apr-July	528.7	337.6	500.0
ROCK CREEK	40/		12502 0 0023)2001	22100	
Red Lodge (near)	109	102	Apr-Sept	134	71	107
	90	110	Apr-July	110	50	82
CLARK FORK RIVER				1		
Chance (at)	515	88	Apr-Sept	716	419	580
	515 461	89	Apr-July	660	386	517
Edgar (at)	555	90	Apr-Sept	773	422	614
	490	91	Apr-July	698	384	539

^(##) Preliminary data furnished by U. S. Geological Survey, subject to correction.
(*) Less than 15 years in 1938-52 period. Average for 15 yrs.nearest the base period.



WYOMING STREAM-FLOW FORECASTS MAY 1, 1958

	Seasona	al Stream	n-Flow in T	housands of Acre	Feet
MISSOURI RIVER BASIN	FORECAST	%	FORE-		1938-52
YELLOWSTONE RIVER	RUNOFF	15-Yr.	CAST	Measured Runoff	Average
TRIBUTARIES IN WYOMING	***	AVG.	PERIOD	1955	
WIND RIVER					
Dubois (at)	80	70	Apr-Sept	66	102*
NORTH POPO AGIE RIVER	1-				0-
Milford (near)	67	77	Apr-Sept	57	87*
TIMMIE DODO ACTE DIVED					
LITTLE POPO AGIE RIVER	20	60	Ann Sont	25	53*
Lander (near)	32	00	Apr-Sept	45	22%
SHOSHONE RIVER					
Buffalo Bill Dam (below)(12) 780	95	Apr-Sept	534	823
Duriaro Dirr Dam (Detom)(12) 100	//	Whr -pcha	7.74	02)
SHELL CREEK					
Shell (near)	70	95	Apr-Sept	72	74%
//	, •			1 -	1 -

⁽¹²⁾ Observed flow plus Storage in Buffalo Bill Reservoir.

(*) Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

(****) Forecasts prepared by George Peak, Soil Conservation Service Office, Casper Wyo.



	Season	al Stream	n-Flow in T	housands	of Acre	Feet
UPPER COLUMBIA RIVER	FORECAST	%	FORE-	4		1938-52
IN MONTANA	RUNOFF	15-Yr.	CAST	Measured	Runoff	Average
		AVG.	PERIOD	1956##	1955	
CLARK FORK RIVER			-			
Bonner (above) (14)	838	109	Apr-Sept	880	739	771
2012101 (00011) ()	738	109	Apr-July	780	645	678
	643	109	Apr-June	695	428	583
Missoula (above)	1921	120	Apr-Sept	2012	1590	1602
(33.3.4.7)	1714	120	Apr-July	1817	1386	1429
	1477	120	Apr-June	1622	994	1229
Missoula (below)	3305	111	Apr-Sept	3960	3094	2971
(202011)	3014	112	Apr-July	3654	2804	2700
	2640	113	Apr-June	3290	2070	2335
St. Regis (at)	4448	113	Apr-Sept	5749	4201	3951
	4035	112	Apr-July	5326	3775	3588
	3 573	115	Apr-June	4817	2843	3112
Plains (near) (15)	10782	100	Apr-Sept	15138	11038	10747
, , , , ,	9845	100	Apr-July	14070	10018	9813
	8461	100	Apr-June	12531	7810	8434
Thompson Falls (at) (15)	11508	100	Apr-Sept	15920	11705	11479
	10526	100	Apr-July	14809	10678	10500
	9032	100	Apr-June	13188	8322	9009
Cabinet Gorge (at) (15)	12235	100	Apr-Sept			12211
	11208	100	Apr-July			11186
	9603	100	Apr-June			9584
BLACKFOOT RIVER			-			
Bonner (near)	1083	127	Apr-Sept	1132	851	851
· · · · · · · · · · · · · · · · · · ·	976	127	Apr-July	1037	742	767
	834	126	Apr-June	927	566	663
BITTERROOT RIVER						
Darby (near)	499	95	Apr-Sept	740	540	525
	463	95 95	Apr-July	701	500	487
	405	94 95	Apr-June	649	394	429
At Mouth (16)	1296	95	Apr-Sept	1948	1504	1369
	1209	95	Apr-July	1837	1418	1270
	1067	97	Apr-June	1667	1075	1105

⁽¹⁴⁾ Difference in observed flow, Clark Fork above Missoula & Blackfoot at Bonner.

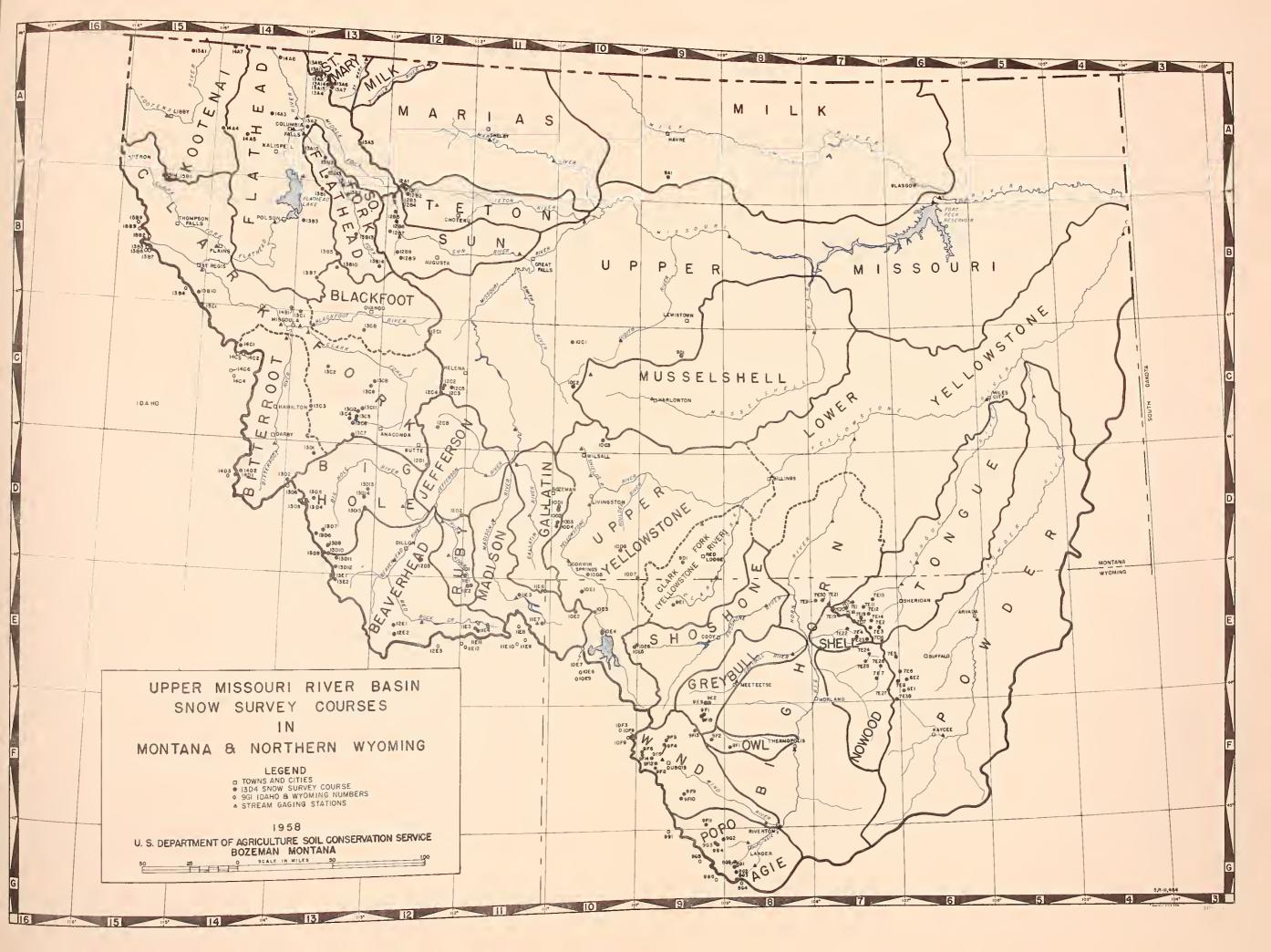
⁽¹⁵⁾ Observed flow plus change in Storage in Flathead Lake & Hungry Horse Reservoir.
(16) Difference in observed flow, Clark Fork above and below Missoula.
(*) Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. (##) Preliminary data furnished by U. S. Geological Survey, subject to correction.



	Seasona	al Stream	-Flow in T	housands	of Acre	Feet
UPPER COLUMBIA RIVER	FORECAST	%	FORE-			1938-52
IN MONTANA	RUNOFF	15-Yr.	CAST	Measured		Average
		AVG.	PERIOD	1956##	1955	
FLATHEAD RIVER						
Columbia Falls (near)	1630	94 94 95	Apr-Sept	2308	1745	1729
(North Fork)	1485	94	Apr-July	2139	1576	1575
	1278		Apr-June	1864	1233	1350
Columbia Falls (at) (17)	5183	92	Apr-Sept	7164	5707	5619
	4831	93	Apr-July	6720	5268	5214
7 / 1/7	4236	93	Apr-June	5959	4208	4530
Polson (near) (15)	6018	91	Apr-Sept	8603 8080	6594	6612 6150
	5598 4840	91 91	Apr-July Apr-June	7137	6111 4857	5317
MIDDLE FORK FLATHEAD RIVER	4040	71	#b1-9mie	1471	40) (7,541
West Glacier (near)	1609	97	Apr-Sept	2093	1682	1659**
,	1489	97	Apr-July	1956	1551	1540*
	1256	94	Apr-June	1712	1224	1330%
SOUTH FORK FLATHEAD RIVER						
Columbia Falls (near) (17)	2030	99	Apr-Sept	2593	2085	2058
(Net inflow to Hungry	1695	99	Apr-July	2488	1977	1950
Horse Reservoir)	1717	99	Apr-June	2279	1630	1727
SWAN RIVER						401
Big Fork (near)	786	134	Apr-Sept	750	570	584
	699	135	Apr-July	676	499	518
	582	136	Apr-June	581	578	427

⁽¹⁵⁾ Observed flow plus change in Storage in Flathead Lake & Hungry Horse Reservoir.
(17) Observed flow plus change in Storage in Hungry Horse Reservoir.
(##) Preliminary data furnished by U. S. Geological Survey subject to correction.
(*) Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.





INDEX TO MONTANA & NORTHERN WYOMING SNOW COURSES

Part							11.4		10 1	.101(1111												Locati Sec.	on	Range	Record	Measuring	teasured
Control Cont				Sec.			_					R)e∀.	Sec.	-					Drainage Basin and Course Name			Lat.		Long.			
Control Property Service Control Property Se		Number					Began	Dates		and Course Name											MISSOURI	RIVER D	RAINAGE	(cont.)			
March Marc		HEAD)	1400	0012 127	D					(UPPER YELLOW	STONE)										0200	20	SSN	90W	1956	2,3,4,5	li
Second Column Second Colum	Lakeview Ridge	11E3			11 ₄ S								2	88			1,2,3,4,5	1	Lake Oeneva	7E16	9000	7	52N	86W	1956	2,3,4,5	1
Company Comp	Limekiln	12E2	6950	5	15S	9W	1948	3,4	1	Cooke City	10D7	7400	25		14E 9E	1937 1935	1,2,3,4,5 3,4	6 2	Sibley Lake	7E11	8000	10	55N	87W	1956	2,3,4,5 2,3,4,5	
September 1988 1988 1988 1988 1988 1988 1988 198			0050	10	145	уя	1740	2,4	1	Independence	1006	8000 7850	44°-341	75	110°-24	1937	1,2,3,4,5	-	Steamboat Point	7E10	7500	32 3					1
Column C			7600	12	88	16W	1948	3,4	1	Lupine Creek				56N) Wyoming							
Second March Mar	Gold Stone Lemhi Pase	13E1	7480	9	108	15W	1948	3,4	1	(SHIELDS RIVE	<u>a</u>)											6					1
The content of the	Trail Creek	13E2	7090	15	108	15W	1948	3,4		Porcupine	10C3	6500	10	ЦN	10E	1938	3,4	1	Munkers Pass	7E8	9700		148N	85W	1950	2,3,4,5	1
Control Cont		13011	6000	21	05	12#	1940	294	1	LOWER YELLOWSTONE									Onion Gulch	7E27	8100	31	L 8N	85W	1956 1950	2,3,4,5	_
Control Cont		13D3	7400	28	38	18W		3,4	1	(WIND RIVER) 1		00	2/	Low	1,0001	1055	231,5	1			8500		7,-		1936	2,3,4,5	1
American fine of the control of the	East Boundary	13D5	6700		38	17W	1948	3,4	_	Brooke Lake #3	10F8	9200	23	1/4N	110W	1939	2,3,4,5	1			COL	UMBIA RI	VER BASI	LN			
Marting 1964 1965	Jahnke Creek	13D8	7340		7S	16W	1948	3,4	1,5	Dinwoodie	9F10	10000	21	39N	105W	1948	2,3,4,5	1		2 (12) 2	££00	6	25N	30W	1956	4.5.5	2
Martin									î	DuNoir	9 F 6	8750 9200	23	μμN	104W	1956	2,3,4,5	1	Baree Mountain	15B1	6000	1	25N	31W	1937	4,5,5 3,4,5,5	2 1,2
## Series 1.64 1.65	(WISE RIVER)									Little Warm	9 F 8	9500		אבע	108W	1948	2,3,4,5	1				8	37N	511 M	1955	4,5,5	1,2
Company Comp	Elk Horn	13D15	8450	15	45	12W	1934	3,4,5	3	Sheridan R.S. #2	9F14	7500	3	42N	109W	1955	2,3,4,5	1		13814							2
Control Cont		13013	6300	15	25	15#	1940	3,4	1				29					11	Big Creek	14A4	5000		30N	26W	1937	3,4,5	1,2
Cartellide 102 655 82 65 87 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10		11E2	5900	2և	108	3W	1948	3.4	1	(POPO AGIE RI	/ER) Wyom	ing							Desert Mountain	1342	5600		31N	19W	1937	1,2,3,4,5	l., 2
Property 1985 198	Cottonwood (Upper	·) 11E1	81100	30	108		1948 1945	3,4 3,4,5	1		805	6500	24	32N	101W	1955	2,3,4	1	Holbrook	13B13	4530	18	21N	13W	1951	1,2,3,4,5	2
Second Control 1.5				13 28					1	Moequito Park R.S.	9 GJ	9500		2S	3W	1940	2,3,4,5	1	Logan Creek	14A5	4300	34	30N	24W	1937	3,4,5	2
Part Control	MADISON RIVER									South Pass	803	9000		30N	101W	1939	2,3,4,5	1	Mineral Creek	13A16		27	35N	1,7W	1956 1951	3,4,5	6 1,2
Control Cont						3E SE			3	Trout Creek	902		5					1	Spotted Bear Mt.	13A10	6500	11	28N	19W	1948	3,4,5	
Part Control					-2-				6				_					1	Trout Lake	13A12	3600	21	28N	17W	1948	3,4,5	
Book					4-								36	43N	101W	1948	2,3,4,5	1									2
Fee Person 100	Hood Meadow	10D3	6600	22	ĹS	6E	1934	2,3,4,5	2,1 2,1		_		25	1.7N	1 U3M	101.8	2 3.1, 5	1		15811	5500	6	25N	30W	1956	4,5,5	2
Control City Pulls Total Pulls P	New World	1001	6700	214	3S	6E	1939	1,2,3,4,5	7	Timber Creek #2	9E3	8800	25	1.7N	103W	1955	2,3,4,5	1	Baree Mountain	15B1	6000	1	25N	31W		4,5,5	2 2
Company 1865 1865 1875			1100	-	110	,-	2//4	1,-,,,,,,,										1	El Dorado Mine	13011	8000	12	6N	13W			1
Control Serve 100								1,2,3,4,5	3										Gold Creek Lk.	13010	7200	14	8N	12W	1946	4	1
Floate Frenche 126 550 10 10 10 10 10 10 1	Graeshopper	1002	7000	19	9N	8E	1938	3,4										6	Intergaard	1304	6450		5N	13W	1939	2,3,4	ار 12
Steels Free 100	Picnic Grounde	1206	6500	10	5N	6W	1940	2,3,4	1 H	(NOWOOO CREEK)	Wyoming								N. Fork Flinter	Cr. 13012	7000		6N	13W	1958	3,4,5	1 5
Ten His Greek H 1203 6800 11 8 6 6 4 1934 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 8 7 195 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1,2,3,4,5 5 3 8cct brown from His Greek Page 1 201 6 0 0 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Stemple Pass	12C1	6900	16	13N	7W	1934	3,4,5	3		7E25 7E24		1 7	SIN	87W	1956		1	Picnic Grounds	1206	6500	10	5N	6W 7W	1940	2.3.4	1
Traight Creek 1241 6000 11 26N 10M 1948 3.14 1 1 1 1 1 1 1 1 1				13 19		6W 5W		1,2,3,4,5	3 3	North Powder	7E36	8300	20	47N	85พ	1956	2,3,4,5	1	Southern Cross	1305	6500	8	5N	13W	1939	2,3,4	1 4
Principle (1944) 6000 13 26ft 10W 10% 3, 1 1 7 yrell is 785 890 30 10N 86W 1956 2,3,1,5 1 Start Mountain 1301 7100 6 1hm 19W 1996 1,2,3,1,5 1 Worth west 1228 500 16 25N 9W 10% 3, 1 1 1 (SIELL OREEN) Wrotting (1948 1742) Column Authors 1228	(TETON RIVER)									Tensleep Lake	7E26	9075	33	50N	86W	1956	2,3,4,5	1	Storm Lake	1307	7780	19	ЦN	13W	1939	2,3,4	1
Work 1281 6000 6 25N 9W 1986 3,1 1									1									1	Stuart Mountain	1301	7400	6	14N	18W	1936	Ł,	1,2
Supering	Wost Fork				25N	9W	1948	3,4	ī	(SHELL CREEK)	Wyoming								BITTERROOT RIVER							ار	1
Camin Creek 1286 5500 33 238 100 1919 53.4 1.2 Constitution of the										Beaver-Tongue Div.	7E20	9200	12	55N	91W	1956	2,3,4,5	1	Gibbons Pass	1302	7100	4	2S	19W	1934	1,2,3,4,5	3,1
CHARLE Park 125 500 31 ALM 104 544 125 500 32 AM 104 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 500 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544 125 544 1040 544 125 544 1040 544 125 544 1040 544 125 544	Cabin Creek	12B6	5400	9 33	23N	10W	1949	3,4		Granite Creek Camp	7E22	7800	15	53N	89W	1956	2,3,4,5	1	Nez Perce Camp	14C1 14D2	1,500 5580	24	11N 0 1S	2LW	1937 1937	3 3,4,5	1
Wrong Greek 12Bi 5700 32 25N 10W 19k9 3, in 1,2 25N 10W 19k9 2,3 in,5 100 1	Oatee Park	1285	5300	31	211N	10W	1949	3,4 3,4 1,5		Borse-Trail Div.	7E19	9200	29	55 N	90W	1956	2,3,4,5									3,4,5,5	2 1
MARIAS RIVER Mariae Pass 1345 5250 34 30N 14W 1936 1,2,3,4,5 3 Five Spee. Falls 7831 7500 19 56N 92W 1956 2,3,4,5 1 Josephine Upper 13415 5000 18*-50' 113*-4.2' 1956 5 3,9 Medicine wheal 7830 900 24 56N 92W 1956 2,3,4,5 1 Josephine Lower #9 1341L 1900 18*-41' 113*-41' 1956 5 Medicine wheal 7830 900 24 56N 92W 1956 2,3,4,5 1 Josephine Lower #9 134LL 1900 18*-41' 113*-41' 1956 5 Medicine wheal 7830 900 24 56N 92W 1956 2,3,4,5 1 Josephine Lower #9 134LL 1900 18*-41' 113*-41' 1956 5 Medicine wheal 7830 900 24 56N 92W 1956 2,3,4,5 1 Josephine Lower #9 134LL 1900 18*-41' 113*-41' 1922 5 3,9 Mount Allen #7 1347 7000 18*-41' 113*-41' 1922 5 3,9 Medicine wheal 7830 900 24 56N 92W 1956 2,3,4,5 1 Josephine Lower #9 134LL 1900 18*-41' 113*-41' 1922 5 3,9 Mount Allen #7 1347 7000 18*-41' 113*-41' 1922 5 3,9 Medicine wheal 7830 7800 12 55N 91W 1956 2,3,4,5 1 1 134L 1900 18*-41' 113*-41' 1922 5 3,9 Medicine wheal 7830 7800 12 55N 91W 1956 2,3,4,5 1 1 134L 1920 1	Wrong Ridge	12B3	6800	17	25N	10W	1949	3,4 3,4 3,4	1,2								2,3,4,5				SASKA	CHEWAN	RIVER BA	SIN			
Martae Pass 1345 5250 34 30N 14W 1936 1,2,3,4,5 3 Medicine Wheel 7E30 9000 24 56N 92W 1956 2,3,4,5 1			,,,,,	,-			=,=,	2,4	-,-	(PORCUPINE CR	EEK) Wyomi	ng							ST. MARY RIVER								
(MILK RIVER) (CONGUE RIVER) Wyoming (MILK RIVER) Rocky Boy 9Al 5200 15 28N 16E 19hl 3,h 7 Beaver Tongue Div. 7E20 9200 12 55N 91W 1956 2,3,h,5 1 Big Goose #1 7E2 7700 h 53N 86W 1955 2,3,h,5 1 Big Goose #2 7E32 7700 h 53N 86W 1955 2,3,h,5 1 Bone-Spring Div. 7E18 9200 32 55N 89W 1956 2,3,h,5 1 Burgess R.S. #1 7E1 7900 36 56N 89W 1956 2,3,h,5 1 Burgess R.S. #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Conce Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Granter Pase 7E17 8950 32 55N 87W 1956 2,3,h,5 1 Granter Pase 7E17 8950 19 5hn 88W 1956 2,3,h,5 1 Granter Pase 7E18 8950 10 5hn 88W 1956 2,3,h,5 1 Granter Pase 7E17 8950 10 5hn 88	Mariae Pass	1345	5250	34	30N	14W	1936	1,2,3,4,5	3					56N 56N				1		13A15				113°-421	1956		3,9
Bocky Boy 9Al 5200 15 28N 16E 19hl 3,h 7 Beaver Tongue Div. 7E20 9200 12 55N 91W 1956 2,3,h,5 1 Big Goose #1 7E2 7700 h 53N 86W 1935 2,3,h,5 1 Big Goose #2 7E32 7700 h 53N 86W 1935 2,3,h,5 1 Bone-Spring Div. 7E18 9200 32 55N 89W 1956 2,3,h,5 1 Bone-Spring Div. 7E18 9200 32 55N 89W 1950 2,3,h,5 1 Bone-Spring Div. 7E18 9200 32 55N 89W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 88W 1956 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3 8950 19 5hN 87W 1950 2,3,h,5 1 Done Lake #1 7E3	(MILK RIVER)									(TONGUE RIVER)	Wyoming								Mount Allen #7	1347	7000	480-44	1	113°-40'	1922		3,9
MUSSELSHELL RIVER Pig Goose #2 TE32 TOO 1 53N 86W 1955 2,3,1,5 1 80ne—Spring Div. TE18 9200 32 55N 89W 1956 2,3,1,5 1 80ne—Spring Div. TE18 9200 32 55N 89W 1956 2,3,1,5 1 80ne—Spring Div. TE18 9200 32 55N 89W 1956 2,3,1,5 1 80ne—Spring Div. TE18 7900 36 56N 89W 1955 2,3,1,5 1 80ne—Lake #1 TE3 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #1 TE3 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 8800 11 53N 87W 1950 2,3,1,5 1 80ne—Lake #2 TE34 80ne—Lake	Rocky Boy	941	5200	15	28N	16E	1941	3,4	7								2,3,4,5	1		1346	6500	480-45	1	1130-421	1922	5	3,9 3,9
Grasshopper 1002 7000 19 9N 8E 1938 3,h 2 Burgess R.S. #1 7E1 7900 36 56N 89W 1950 2,3,h,5 1 Burgess R.S. #2 7E33 7900 36 56N 89W 1955 2,3,h,5 1 Dome Lake #1 7E3 8800 11 53N 87W 1950 2,3,h,5 1 Dome Lake #2 7E3h 8800 11 53N 87W 1950 2,3,h,5 1 Granite Pase 7E17 8950 19 5hN 88W 1956 2,3,h,5 1 U.S. Forest Service 8. City of Bozeman J. Wontama Power Company 9. Dominion Water & Power Bureau H. Montama Power Company 10. U.S. Fish and Wildlife Service J. S. Indian Service 11. U.S. Bureau of Reclamation										Big Goose #2	7E32	7700	4	53N	86W	1955	2,3,4,5	1									
Dome Lake #1 783 8800 11 53N 87W 1950 2,3,4,5 1 5N 87W 1950 2,3,4,5 1 1 5N 87W 195	Grasehopper	10C2	7000	19	9N	8E	1938	3,4	2	Burgese R.S. #1 Burgess R.S. #2	7E1 7E33	7900 7900	36 36	56N 56N	89W 89W	1950 1955	2,3,4,5		a. Numerals 1,2	,3,4 and 5	refer to	January	l, Febr	uary 1, 1	March 1,	April 1 and 1	lay 1.
Granite Pase 7E17 8950 19 54N 88W 1956 2,3,4,5 1 2. U.S. Forest Service 7. Montana Experiment Station 3. U.S. Geological Survey 9. Dominion Mater & Power Bureau 4. Montana Power Company 10. U.S. Fish and Wildlife Service 5. U.S. Indian Service 11. U.S. Bureau of Reclamation										Dome Lake #2	7E34	8800	11 11	53N 53N	87W 87W	1950 1950	2,3,4,5	1	b. Numerals ref	er to Agen	cy that se	ecuree t	he snow	survey a	s follows	ı	
4. Montana Power Company 10. U. S. Fish and Wildlife Service 5. U. S. Indian Service 11. U. S. Bureau of Reclamation												9300 89 5 0	32 19	55N 54N					2. U. S. Forest	Service						Station	
5. U. S. Indian Service 11. U. S. Bureau of Reclamation	TODA GCS LINECOLO OCSA 1034																		4. Montana Power	r Company	У		9. D	ominion 1	Water & F		
																			6. National Park	Service k Service			11. U	. S. Bury	eau of Re	clamation	

MONTANA SNOW SURVEYS - ABOUT MAY 1, 1958

					SNOW C	OVER M	EASUREM	ENTS	
MISSOURI BASIN			·	1958			ast Rec		Total
DRAINAGE BASIN			Date	Snow	Water		Conten	t (In.)	Years
AND SNOW COURSE	No.	Elev.	of Survey	Depth (In.)	Content (In.)	1957	1956	15-Year Average 1938-52	of Record
JEFFERSON RIVER									
(Rock-Beaverhead) Lakeview Canyon Lakeview Ridge (Big Hole)	11E4 11E3	6930 7400	5/1 5/1	41	13.2	12.2	7.0 4.7	10.1**	7 7
Gibbons Pass #Moose Creek (Wise River)	13D2 13D16	7100 6200	4/30	73	26.5	26.0	27.2 15.8	20.6% 10.6%	22 14
Elk Horn	13D15	8450	4/30	38	11.8	10.6	9.8	7.0%	15
MADISON RIVER									
Hebgen Norris Basin 21-Mile W. Yellowstone	11E5 10E2 11E6 11E7	6550 7500 7150 6700	4/28 4/30 4/28 4/28	26 22 46 16	8.9 7.7 14.4 5.0	12.4 8.1 21.5 10.8	1.6 5.7 18.8 5.7	2.6 6.0** 11.8 3.6	24 6 21 24
GALLATIN RIVER									
Devil's Slide Hood Meadow 21-Mile	10D4 10D3 11E6	8100 6600 7150	4/26 4/27 4/28	80 35 46	26.6 10.4 14.4	24.6 6.9 21.5	26.2 5.8 18.8	22.0 4.3 11.8	23 23 21
MISSOURI RIVER MA	IN STEM	<u> </u>							
Chessman Res. Kings Hill Pipestone Pass Stemple Pass Tenmile, Lower Tenmile, Middle Tenmile, Upper (Marias River)	1205 1001 12D1 12C1 12C2 12C3 12Cl ₄	6200 7950 7200 6900 6250 6800 8000	4/29 4/30 5/2 4/28 4/26 4/26 4/26	21 45 36 42 26 47 59	4.8 14.6 10.4 13.4 6.7 13.4 18.5	1	2.7	12.7* 2.2* 6.8*	22 17 18 20 22 23 22
Marias Pass	13A5	5250	4/29	.39	15.5	17.0	21.4	9.9	22

^{*}Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. **Average for period of record. #Adjacent Basin.



	ormanistic environmentensistementensisteme		· _ · · · · · · · · · · · · · · · · · ·		SNOW C	OVER M	EASUR EM	ENTS	
MISSOURI BASIN				1958	Divow 0	P	ast Rec	ord	Total
DRAINAGE BASIN			Date	Snow	Water		Conten		Years
AND SNOW COURSE	No.	Elev.	of Survey	Depth (In.)	Content (In.)	1957	1956	15-Year Average 1938-52	of Record
LOWER YELLOWSTON	E (Wind	River)							
Big Warm Brooks Lake Burroughs Creek Dinwoodie Dry Creek DuNoir Geyser Creek Little Warm Sheridan R.S.#2 T-Cross Ranch Togwotee Pass	9F12 10F8 9F4 9F10 9F9 9F6 9F7 9F8 9F14 9F3 10F9	8800 9200 8800 10000 9500 8750 8500 9500 7500 8000 9600	4/25 4/24 4/26 4/27 4/27 4/25 4/25 4/24 4/26 5/1	21 69 41 46 28 21 16 57 14 10 73	4.7 23.2 10.8 10.8 5.9 5.2 4.1 16.6 2.7 1.9	11.8 28.1 15.7 16.4 10.4 10.7 10.2 23.9 8.0 7.4 32.7	13.3 37.1 23.5 21.8 11.2 14.0 11.4 28.7 9.7 9.0 47.4	26.5% 16.4% 15.9% 8.6% 7.4% 6.8% 21.5% 4.6% 34.8%	9 9 9 16 9 3 15
LOWER YELLOWSTON									Andread and a second a second and a second and a second and a second and a second a
Blue Ridge Hobbs Park Mosquito Park R.S Sawmill Glade South Pass St. Lawrence R.S Trout Creek	8G1 8G3 .9F11	9500 10000 9500 8500 9000 9000 8400	5/1 4/29 4/29 5/1 5/1 4/28 4/29	44 65 38 32 40 26 24	12.2 16.4 9.0 9.4 11.4 5.6 6.1	15.3 22.7 13.9 11.6 19.0 11.4 10.4	15.6 27.3 9.7 4.3 19.1 9.4 0.0	12.5* 23.1* 8.2* 6.8* 14.6* 7.8* 2.9*	9 13 18 18 14
LOWER YELLOWSTON	E (Owl	Creek)							Account for the control of the contr
Owl Creek	8Fl	8700	4/30	34	9.0	8.2	6.8	7.6%	. 8
LOWER YELLOWSTON	E (Grey	bull Riv	rer)	/					
Timber Creek #2 Wood River #2						9.0 12.4	-		2 3
LOWER YELLOWSTON	E (Shos	hone Riv	er)						
East Entrance Sylvan Pass	10E6 10E5	7000 7100	4/29 4/29	21 37	7.8 12.6	10.2 15.1		8.8*	4 16

^{*}Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. **Average for period of record.



NTCCOTTE DAGTE				7.000	SNOW C	0			
MISSOURI BASIN DRAINAGE BASIN			Date	1958 Snow	Water		ast Red Conter	ord nt (In.)	Total Years
AND SNOW COURSE	No.	Elev.	of		Content (In.)		1956	15-Year Average 1938-52	of
LOWER YELLOWSTONE (Nowood	Creek)							
Cold Springs Camp Medicine Lodge Lks Munkers Pass (Muddy) Onion Gulch Tensleep Lake Tensleep R.S.	7E25 7E24 7E8 7E27 7E26 7E7	8700 9500 9700 8100 9075 8300	4/26 4/26 5/2 5/2 4/27 4/27	26 45 42 36 51 31	7.2 11.8 12.2 10.3 11.7 7.4	6.1	6.6 10.8 12.4 7.3 11.4 3.2	9.4** 4.5	2 1 7 2 1 22
LOWER YELLOWSTONE (Shell (Creek)							•
Bald Mountain Beaver-Tongue Div. Bone-Spring Div. Granite Cr. Camp Granite Pass Ranger Creek Shell Creek	7E21 7E20 7E18 7E22 7E17 7E4 7E23	9600 9200 9200 7800 8950 8800 9600	4/22 4/21 5/3 4/25 5/3 4/25 4/25	68 63 64 10 64 37 63	19.9 17.0 20.3 1.5 20.3 8.2 15.2	23.5 19.3 19.8 0 19.9 9.2 15.6	24.2 23.6 20.8 0 21.2 8.2 17.9		2 2 2 2 2 2 21 2
LOWER YELLOWSTONE (Porcupi	ine Cree	k)						
Five Springs Falls Medicine Wheel	7E31 7E30	7500 9000	4/30 4/21	26 49	7.2 14.8	5.6 16.3	4.6		2 2
LOWER YELLOWSTONE (Tongue	River)				Total Control of the			
Beaver-Tongue Div. Big Goose #2 Bone-Spring Div. Burgess R.S. #2 Dome Lake #2 Gloom Creek Granite Pass Sibley Lake Sucker Creek Steamboat Point Wood Rock G.S.	7E20 7E32 7E18 7E33 7E34 7E14 7E17 7E11 7E12 7E10 7E13	9200 7700 9200 7900 8800 9300 8950 8000 9000 7500 8500	4/21 4/29 5/3 14/22 14/29 14/21 5/3 14/25 14/25	63 55 64 35 60 88 64 59 76 47 57	17.0 12.3 20.3 6.3 13.5 16.9 20.3 12.6 14.9 12.5 10.7		23.6 9.9 20.8 8.7 14.2 17.3 21.2 10.4 13.8 9.8 13.7	### #### #############################	2 3 2 3 2 2 2 2 2 2 2
LOWER YELLOWSTONE (•							
Muddy Creek G.S. Munkers Pass (Muddy) Onion Gulch Soldier Park Sour Dough	7E28 7E8 7E27 7E5 7E6	7800 9700 8100 8700 -8500	5/1 5/2 5/2 5/1 5/1	20 42 36 38 38	5.7 12.2 10.3 10.8	8,2	5.1 12.4 7.3 11.0 10.8	9,4** 5.2** 5.4*	2

^{*}Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. **Average for period of record.



					SNOW C	OVER MI			
COLUMBIA BASIN DRAINAGE BASIN			Date	1958 S now	Water		ast Rec Conten	ord t (In.)	Total Years
AND SNOW COURSE	No.	Elev.	of Survey		Content		1956	15-Year Average 1938-52	of Record
KOOTENAI RIVER (ab	ove Lib	by, Mor	ıtana)						THEORY BY CLUTTER FRAME MAJERIES
Baree Creek Baree Mountain Bluebird Basin Brush Creek Fernie Ferguson Gray Creek Kimberley Marble Canyon New Fernie Red Mountain Sandon Sinclair Pass Smith Creek Sullivan Mine Weasel Divide	15Bll 15Bl 14Al 14Al Can Can Can Can Can Can Can Can 15Al Can Can Can 14A7	5500 6000 6800 5000 3500 3800 5100 4100 6000 4500 4500 4500 5100 5150	5/1 4/30 Est. 4/29 5/1 4/27 4/28 5/1 4/28 4/28 4/28 4/30 4/30	95 94 93 Trace 0 35 49 35 0 55 8 0 102 38	48.1 42.9 41.8 0 16.4 17.5 0.7 12.3 0 20.3 4.0 0 48.7 13.5 34.0	46.6 45.6 36.4 11.8 0 17.1 21.5 0.0 14.2 0.0 18.4 5.3 1.9 43.2 12.1 32.6	51.0 57.4 52.6 13.7 6.0 20.3 20.3 1.4 11.7 8.6 25.2 6.3 3.1 55.4 16.1 41.0	40.3 36.4* 8.7** 3.8** 17.4** 20.6** 13.7** 7.7** 15.1 7.3** 3.4** 37.3* 11.3** 31.3*	12 12 10 3 11 6 20 8 8
Basin Creek Big Creek Bluebird Basin Brush Creek Coyote Hill Desert Mountain Hell Roaring Div. Holbrook Logan Creek Marias Pass N. Fork Jocko Spotted Bear Mt. Strawberry Lake Trinkus Lake Trout Lake Twin Creeks Upper Holland Weasel Divide	13B14 13B3 14A1 14A4 13B10 13A2 14A3 14A5 13B13 14A5 13B2 13B10 13B1 13A12 13B11 13B5 14A7	5000 6750 6800 5000 4200 5600 5700 4300 5250 6330 7000 6500 3580 7000 5450	4/30 4/29 Est. 4/29 5/1 4/25 4/29 4/29 5/1 4/28 4/28 4/30	1, 39 82	56.4 41.8 1.4 15.8 32.1 0 15.5 51.7 11.2 47.3 48.1 3.3	0.0 48.1 36.4 11.8 0.7 15.6 0.9 17.0 8.9 42.9 42.0 42.0 34.2 32.6	0.0 48.5 52.6 13.7 0.9 15.5 0.0 4.8 21.4 48.3 10.9 41.0 36.4 5.0 39.5 41.0	2.1** 45.2** 36.4* 8.7** 2.2** 9.6 28.0* 1.7** 1.6* 9.9 40.8** 11.5** 9.4** 36.5** 31.2*	19 14 11 21 16 7 19 23 10 7 9 10 7

^{*}Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. **Average for period of record.



MONTANA SNOW SURVEYS - ABOUT MAY 1, 1958

			SNOW COVER MEASUREMENTS						
COLUMBIA BASIN			Date	1958 Snow		Past Record			Total
DRAINAGE BASIN						Water Content (In.)			Years
AND SNOW COURSE	No.	Elev.	of Survey	Depth (In.)	Content (In.)	1957	1956	15-Year Average	of Record
BNOW COULDE	140.	TITEV.	Dai vey	(1110)	(111.)	エクノ(1900	1938-52	record
UPPER CLARK FORK									
Baree Creek Baree Mountain Coyote Hill Chessman Res. Fish Lake, Ida. Freezeout Summit Hoodoo Creek Lubrecht For. #6 N. Fork Jocko Pipestone Pass Smith Creek Stemple Pass Storm Lake Tenmile, Lower Tenmile, Middle Tenmile, Widdle Tenmile, Upper TV Mountain #49 Meadows #Lookout	15B11 15B1 13B10 12C5 21B4 15B10 15C1 13C8 13B7 12D1 16A1 12C1 13C7 12C2 12C3 12C4 14B1 15B3 15B2	5500 6000 4200 6200 5000 7000 6200 5400 6330 7200 4800 6900 7780 6800 8000 6800 5000 5250	5/1 4/30 5/1 4/29 4/30 4/30 5/1 5/2 4/26 4/26 4/26 4/26 4/29	95 94 21 90 86 112 0 107 36 102 43 26 47 57 79 83	48.1 42.9 1.4 4.8 41.7 36.4 47.2 51.4 48.7 13.4 21.4 6.7 13.5 21.0 31.5 38.4	46.6 0.7 3.9 36.2 51.0 42.8 51.0 42.8 43.2 16.6 6.6 151.1 28.4 35.3	51.0 57.4 0.9 2.3 47.2 50.0 63.1 0.0 48.3 0.7 55.4 18.0 2.7 9.4 18.7 23.4 32.3 42.7	40.3 2.2** 1.6 45.5 31.5* 43.4* 0.0** 40.8** 2.2* 37.3* 6.8* 14.2* 2.0 6.9 10.4 - 28.8* 22.1*	2 21 11 22 3 16 15 6 10 18 19 23 16 22 23 22 21 21
BITTERROOT						e Primi in Papa Papa Papa Papa Papa Papa Papa Pap			
Gibbons Pass Nezperce Camp Nezperce Pass #Lolo Pass #Moose Creek #Packers Meadow	13D2 14D2 14D1 14C5 13D16 14C2	7100 5580 6575 5230 6200 5700	4/30 5/2 5/2 4/30 4/30	73 34 43 64 42	26.5 14.1 17.1 31.1	26.0 11.5 11.7 33.8 10.3 21.5	27.2 15.4 15.5 35.6 15.8 23.9	20.6* 5.5* 10.2* 10.6 12.9	22 19 20 2 14 20

^{*}Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. **Average for period of record. #Adjacent Basin.



MONTANA SNOW SURVEYS - ABOUT MAY 1, 1958

				· · · · · · · · · · · · · · · · · · ·	SNOW C	OVER M	EASUREI	ÆNTS	
MISSOURI BASIN		_	Date of Survey	1958	Water Content (In.)	Past Record Water Content (In.)			Total Years
DRAINAGE BASIN				Snow Depth (In.)					
AND SNOW COURSE	No.	Elev.				1957	1956	15-Year Average 1938-52	of Record
							-		
HUDSON BAY DRAINAGE									
ST. MARY BASIN						Property of the state of the st			i i
Iceberg Lake Josephine Lower #9 Mount Allen Piegan Pass #6 Ptarmigan #8	13A3 13A15 13A7 13A6 13A8	5750 4900 5700 6250 6000	5/1 4/30 4/30 4/30 5/1	58 38 95 80 74	26.4 15.8 44.3 37.8 34.6	26.2 17.6 48.3 41.3 39.1	38.8 23.1 49.4 45.4 48.4	23.1 39.9 29.5 29.7	36 2 36 36 21
UPPER YELLOWSTONE									
Canyon Cooke City Lake Camp Lake Camp New Lodgepole, Wyo. Lewis Lake Div. Lupine	10E3 10D7 10E4 9E1 10E9 10E1	7750 7400 7850 7850 8200 7900 7300	5/1 4/30 4/30 4/30 5/1 5/1 4/30	40 22 31 28 34 92 22	14.3 7.8 9.4 7.5 9.2 38.5 7.2	17.3 8.2 9.3 7.7 12.6 50.6 8.9	17.4 6.8 15.2 16.0 63.9 9.4	12.1** 6.1** 8.5** 9.5* 48.3* 9.1**	13 13 11 1 18 6 7

^{*}Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. **Average for period of record.



STATUS OF RESERVOIR STORAGE MISSOURI RIVER IN MONTANA May, 1958

BASIN			USABLE STORAGE - 1000 ACRE FEET							
& STREAM		CAPACITY 1000 A.F.	1958	1957	1956	1938-52 AVG.	YRS.			
MISSOURI RIVER BA	SIN									
Beaverhead Madison River Madison River Hyalite Creek Missouri River Missouri River	Lima Hebgen Lake Ennis Lake Middle Creek Canyon Ferry Hauser Lake	84.0 345.0 41.0 8.0 2043.0	45.3 167.8 33.0 4.5 1531.0	12.3 175.7 37.5 3.7 1479.0	46.9 187.6 27.9 4.5 1637.0	60.0* 234.0 32.6 4.6** 1309.0**	17 22 22 6 5			
Missouri River Missouri River N.Fk. Sun River N.Fk. Sun River N.Fk. Sun River N.Fk. Sun River Marias River Birch Creek Dupuyer & Birch Judith River Missouri River Milk River Milk River W. Rosebud Cr. Tongue River Swiftcurrent Cr.	& Lake Helena Lake Helena Holter Lake Gibson Willow Creek Pishkun Tiber Swift Lake Francis Ackley Lake Ft. Peck 3/ Fresno Nelson Mystic Lake Tongue River Sherburne Lake	10.4 81.9 105.0 32.3 32.0 1316.0 30.0 112.0 5.8 19410.0 127.2 66.8 20.8 73.9	52.9 7.2 71.9 39.4 24.0 17.0 24.7 97.4 8102.0 125.5 55.5 3.2 26.9	62.5 10.4 12.6 46.1 24.5 19.0 577.5 28.7 92.0 3.7 5757.0 124.4 58.9 3.3 16.0 14.4	55.6 8.1 73.0 77.0 28.2 23.6 130.6 30.0 92.3 4.2 5164.0 108.6 41.8 2.0 18.9 25.2	42.1* 4.9** 55.2 73.0 14.1 18.5 24.9 78.8 4.4* 10914.9* 93.6 31.8 2.8 19.6** 24.9	18 10 22 22 22 22 22 22 18 17 18 22 22 17 22			
MISSOURI RIVER BAS	SIN - WYOMING									
Shoshone River Wind River Wind River Bull Creek Belle Fourche	Buffalo Bill Boysen Pilot Butte Bull Lake Key Hole	440.0 408.6 31.6 152.0 190.0	110.0 197.7 27.7 56.6 11.6	97.6 202.5 27.7 60.1 3.2	130.4 0.0 27.3 51.9 17.2	266.6 246.3 20.9 45.6 14.6**	23 6 22 20 6			
MISSOURI RIVER BAS	SIN - NORTH DAKO									
Heart River Heart River Missouri River	Heart Butte Dickerson Garrison Lake	54.8 4.3 13805.0	65.0 5.9 4502.0	50.6 5.1 1102.0	67.1 4.8 1256.0	66.6** 5.4**	8 7 3			
MISSOURI RIVER BAS	SIN - SOUTH DAK			10.0						
Belle Fourche Cheyenne River Cheyenne River Grand River Missouri River	Belle Fourche Angostura Deerfield Shadehill Ft. Randall	185.0 160.0 15.1 84.0 2401.6	98.9 68.6 12.1 82.0 2830.5	62.5 40.1 9.2 152.8 2132.5	119.0 74.4 11.9 140.6 1683.6	 13.0** 148.4**	2 2 5 5 4			

^{*}Less than 15 years in 1938-52 period. Average for 15 years nearest the base period. **Average for period of record. 3/Gross contents including 617,000 A.F. Dead Storage



STATUS OF RESERVOIR STORAGE COLUMBIA RIVER IN MONTANA May, 1958

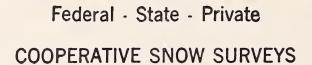
BASIN		USABLE	USABLE STORAGE - 1000 ACRE FEET				
& STREAM	RESERVOIR	CAPACITY 1000 A.F.	1958	1957	1956	1938-52 AVG.	YRS.
COLUMBIA RIVER BASI	<u>N</u>						
Flint Creek S. Fk. Flathead Flathead River Flathead River 6/ Flathead River 7/ Jocko Creek	Georgetown Lk. Hungry Horse Flathead Lake Camas Res. Mission Valley Lower Jocko Lk.		21.5 2276.0 721.7 36.9 21.1 2.4	16.0 1970.0 678.9 39.6 35.0 1.4	18.0 1942.0 1079.0 41.8 47.3	21.7% 1452.0% 955.5 25.8% 48.5%	50

*Less than 15 years in 1938-52 period. Average for 15 years nearest the base period.

**Average for period of record.

^{6/}Camas Reservoirs are shown as a sum of (4) small reservoirs on the west side of Flathead Lake located on Dry Creek and Little Bitterroot River.

^{7/}Mission Valley Reservoirs are shown as a sum of (8) small reservoirs located south and east of Flathead Lake. Both Camas and Mission Valley reservoirs are operated by the Indian Irrigation Service.



Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"WATER IS THE WEST'S GREATEST RESOURCE"